

Remarks

Favorable reconsideration of this application, in view of the above amendments and in light of the following remarks and discussion, is respectfully requested.

Claims 1-8 are currently pending in the application; dependent Claim 7 having been amended by way of the present response.

Initially, Applicants respectfully assert that dependent Claim 7 has been amended in a non-narrowing manner to avoid a potential informality, and not for any reason related to the patentability of the claims in view of one or more references of record in the application.

In the outstanding Office Action, dependent Claim 3 was rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to convey to one skilled in the art that Applicants, at the time the application was filed, had possession of the claimed invention. Specifically, the Office Action asserts that “[t]here is no support in the specification for both a nut engaging a screw member and the terminal having a female hole.” The Office Action continues stating that page 12 of the application, which refers to a non-limiting example of the invention illustrated in Figure 3, supports for this assertion. However, Applicants respectfully traverse these assertions for the following reasons.

Applicants respectfully assert that while Figure 3 shows a non-limiting example of an exterior case for a power semiconductor module that does not include a terminal nut 5, it is understood that the exterior case illustrated in the figure can be used with an electrode plate 7 and a fastening nut 11, for example, as discussed with regard to the embodiment of the invention shown in Figures 1 and 2 and as discussed from page 6, line 14 to page 12, line 1, of the application. Thus, Applicants respectfully request that the rejection of dependent Claim 3 under 35 U.S.C. § 112, first paragraph, be withdrawn.

In the Office Action, dependent Claim 4 was rejected under 35 U.S.C. § 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly claims subject matter which Applicants regard as an invention. Specifically, the Office Action asserts that “[i]t is unclear how the word nominal further limits the scope of diameter.” However, Applicants respectfully traverse this assertion for the following reasons.

Applicants respectfully assert that the claimed features of “nominal diameters” are understood by one of ordinary skill to include, for example, outermost diameters of threaded ends of the male screw member. Thus, Applicants respectfully request that the rejection of dependent Claim 4 under 35 U.S.C. § 112, second paragraph, be withdrawn.

In the Office Action, Claims 1, 2, 6, and 8 were rejected under 35 U.S.C. § 103(a) unpatentable over U.S. Patent No. 5,646,445 to Matsumoto et al. (Matsumoto) in view of the Admitted Prior Art and Japanese Publication No. 7-279109 to Arita et al. (Arita). Claim 3 was rejected under 35 U.S.C. § 103(a) being unpatentable over Matsumoto, the Admitted Prior Art, and Arita and further in view of Japanese Publication No. 9-55462 to Takegawa. Claims 5 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Matsumoto, the Admitted Prior Art, and Arita, and further in view of U.S. Patent No. 4,018,132 to Abe. Applicants respectfully request withdrawal of the rejections of the claims for the following reasons.

The present invention is directed to power semiconductor modules. Independent Claim 1 recites an electrode terminal connected with an electric power semiconductor device which is resin sealed inside of a case at one end while having a hole and exposed along a side of an outer surface of the case at the other end. An electrode plate for external connection has a hole and is arranged to overlie the electrode terminal on an outer surface of the case. A female screw hole is provided on the outer surface of the case so as to correspond to the hole of the electrode terminal. A male screw member has screw threads disposed on both ends, penetrating through the hole of the electrode terminal and engaging threadedly with the female screw hole at one end while projecting from the upper surface of the electrode terminal at the other end. The

electrode plate for external connection is electrically connected with the electrode terminal on the outer surface of the case by placing the electrode plate so that the male screw member passes through the hole of the electrode plate, and then engaging a nut with the male screw member.

Matsumoto is directed to a semiconductor device having electrodes embedded in an insulating case. As shown in Figure 29, for example, of Matsumoto, main electrodes 1 and 2 are stored in a storage chamber, while upper ends thereof are outwardly exposed through an upper end portion of a case 11. The upper ends of the main electrode plates 1 and 2 are bent to cover nuts 31, which are embedded in the upper end portion of the case 11. The upper ends of the main electrode plates 1 and 2 are provided in portions opposed to holes of the nuts 31 with through holes, whereby the device can be fastened to an external unit through bolts.¹

However, Applicants respectfully assert that Matsumoto does not teach or suggest, and the Office Action seems to concede that Matsumoto does not teach or suggest,² the claimed features of a male screw member having screw threads disposed on both ends penetrating through a hole of an electrode terminal, and then engaging a nut with the male screw member, as recited in independent Claim 1.

Specifically, independent Claim 1 recites “a male screw member having screw threads disposed on both ends, penetrating through said hole of said electrode terminal . . . , and then engaging a nut with the male screw member.”

The Admitted Prior Art is directed to a conventionally known connection structure. As shown in Figure 9 of the application, to connect an electrode plate 97 with an electrode terminal 83, the electrode plate 97 is positioned on the electrode terminal 83 such that a center axis of a bolt-insertion hole 98 formed along a thickness direction of the electrode plate 97 coincides

¹ Column 2, lines 12-20.

² Page 4, lines 3-5, of the outstanding Office Action.

with a center axis of a female screw hole of a terminal nut 85 and a bolt-insertion hole 84 of the electrode terminal 83, and in this state, a fastening bolt 89 is fastened to the terminal nut 85 through the electrode plate 97 and the electrode terminal 83. With this operation, the electrode plate 97 and the electrode terminal 83 are electrically connected to each other, and an electric signal generated in the power semiconductor module is introduced into the electrode plate 97 through the electrode terminal 83.³

However, Applicants respectfully assert that the Admitted Prior Art does not teach or suggest, and the Office Action seems to concede that the Admitted Prior Art does not teach or suggest,⁴ the claimed features of a male screw member having screw threads disposed on both ends penetrating through a hole of an electrode terminal, and then engaging a nut with the male screw member, as recited in independent Claim 1.

The Office Action relies on Arita in an attempt to remedy the deficiencies of Matsumoto and the Admitted Prior Art. However, Applicants respectfully assert that regardless of the teachings of Arita, none of Matsumoto, the Admitted Prior Art, and Arita provides the required motivation to combine the references.

Arita is directed to a mounting structure for expansion. As shown in Figures 1 and 2, for example, of Arita, a mounting structure is made up of a male screw body 3 which is screwed in a female screw section 20, and of a nut 4 screwed on the male screw body 3.⁵

However, Applicants respectfully assert that Arita does not teach or suggest the claimed features of a male screw member having screw threads disposed on both ends penetrating through a hole of an electrode terminal, and then engaging a nut with the male screw member, as recited in independent Claim 1. Specifically, Applicants respectfully assert that Arita does not show or state an electrode terminal, for example.

³ Page 2, lines 3-16, of the originally filed application.

⁴ Page 4, lines 13-14, of the outstanding Office Action.

⁵ English language abstract.

The Office Action states that “[i]t would have been obvious to one of ordinary skill in the art to engage a nut to the other end of the male screw in order to hold the items beneath the nut to the body of the package as taught by [Arita].” Applicants respectfully traverse this assertion for the following reasons.

As stated in MPEP § 2143.01, “[o]bviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves.” In this case, Applicants respectfully assert that the Office Action has not provided any required teaching, suggestion, or motivation in Matsumoto, the Admitted Prior Art, or Arita to combine the asserted teachings of Matsumoto and the Admitted Prior Art of an electrode terminal having a hole with the asserted teachings of Arita of a male screw member having screw threads disposed on both ends, and then engaging a nut with the male screw member. Rather, Applicants respectfully assert that the only motivation for combining Matsumoto, the Admitted Prior Art, and Arita is provided by Applicants’ disclosure.

Applicants respectfully assert that the claimed features recited in independent Claim 1 provide numerous advantages. Specifically, Applicants respectfully assert that the claimed features of a male screw member having screw threads disposed on both ends penetrating through a hole of an electrode terminal, and then engaging a nut with the male screw member, as recited in independent Claim 1, can provide a connection structure capable of easily positioning an electrode plate with respect to an electrode terminal, and capable of realizing efficient assembling operation.⁶ The claimed features recited in independent Claim 1 can result in a position of the electrode plate being automatically determined by disposing the electrode plate while inserting the male screw member into an insertion hole of the plate. It can be possible to easily position the electrode plate such that a center axis of the insertion hole of

⁶ Page 3, lines 7-15, of Applicants’ originally filed application.

the electrode plate coincides with a center axis of an insertion hole of the electrode terminal. In this case, it can be unnecessary to hold the electrode plate at a predetermined position in fastening. Thus, it can be possible to shorten a time required for electrically connecting both the members.⁷

For the above reasons, Applicants respectfully submit that the rejection of independent Claim 1 in view of Matsumoto, the Admitted Prior Art, and Arita is based on the improper application of hindsight considerations. It is well settled that it is impermissible simply to engage in hindsight reconstruction of the claimed invention, using Applicants' structure as a template and selecting elements from the references to fill in the gaps.⁸ Recognizing, after the fact, that a modification of the prior art would provide an improvement or advantage, without suggestion thereof by the prior art, rather than dictating a conclusion of obviousness, is an indication of improper application of hindsight considerations. (Underlining added).

Simplicity and hindsight are not proper criteria for resolving obviousness.⁹ Further, Applicants respectfully submit that the "fact that references can be combined or modified is not sufficient to establish *prima facie* obviousness."¹⁰ Therefore, Applicants respectfully assert that an improper "obvious to try" rationale is being applied in the Office Action.¹¹ Specifically, Applicants respectfully assert that because none of Matsumoto, the Admitted Prior Art, and Arita teaches or suggests the desirability of the claimed features of a male screw member having screw threads disposed on both ends penetrating through a hole of an electrode terminal, and then engaging a nut with the male screw member, the Office Action has failed to establish a *prima facie* case of obviousness.

⁷ From page 10, line 20 to page 11, line 11, of Applicant's originally filed application.

⁸ *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

⁹ *In re Warner*, 397 F.2d 1011, 154 USPQ 173 (CCPA 1967).

¹⁰ See Heading under MPEP 2143.01.

¹¹ See MPEP 2145 X.B.

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Thus, for at least these reasons, Applicants respectfully request that the rejection of independent Claim 1 under 35 U.S.C. § 103(a) be withdrawn and the independent claim allowed.

Dependent Claims 2-8 depend from independent Claim 1, and are therefore also allowable for the same reasons as the independent claim, as well as for their own features. Thus, Applicants respectfully request that the rejections of dependent Claims 2-8 be withdrawn and the dependent claims allowed.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal Allowance. A Notice of Allowance for Claims 1-8 is earnestly solicited.

Should the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact the undersigned representative at the below listed telephone number.

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.

A handwritten signature in black ink, appearing to read 'G. Maier', is written over a horizontal line. To the right of the signature, the date '11-21-03' is handwritten.

Gregory J. Maier
Registration No. 25,599
Attorney of Record

Philip J. Hoffmann
Registration No. 46,340

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